

REMARKS

Reconsideration and withdrawal of all outstanding rejections and objections are respectfully requested in view of the amendments presented herein and the following remarks.

Amendments to Specification and Abstract

A Replacement Abstract is submitted to delete the stray reference to "FIGURE 4" and to more closely conform to new claim 19.

A Substitute Specification is being filed to add paragraph numbering for ease of reference and to correct the capitalization in the phrase on the last page thereof which previously read "What is Claimed Is."

For the sake of clarification and conformity with the preamble to new claim 19 and with the paragraph headed "Field of the Invention" on page 1 of the Specification, the Title of the Invention has been amended to more appropriately reflect the general nature of the invention.

A Cross Reference to Related Applications" section has been added immediately following the Title of the Invention.

No new matter has been introduced by way of the Substitute Specification or the Replacement Abstract.

Miscellaneous Amendments

Before addressing the prior art or any of the outstanding rejections, Applicant wishes to briefly note a number of non-substantive amendments to claims which are of a purely formal nature and which were not made to distinguish any prior art or for any other reason relating to patentability.

Specifically, claims 2-18 have also been amended to be more grammatical by replacing “Housing” with “A housing” in their preambles. Various other amendments have been made in claims 2, 5, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17 and 18 to make grammatical and idiomatic improvements. Also, claim 18 has been amended to depend from claim 17 rather than claim 14 in order to more clearly provide antecedent basis for the “adhesive” recitation.

None of the foregoing amendments narrows the scope of any of the claims either literally, or under the Doctrine of Equivalents.

Rejections Under 35 U.S.C. §102(b)

Claims 1-18 were rejected under 35 U.S.C. §102(b) as allegedly anticipated by Oshino ‘484. No other rejections or objections to the claims have been made.

Claim 1 has been cancelled in favor of new claim 19 and claims 2, 3, 4, 5, 7, 12 and 14 have been amended to depend directly from new claim 19. Thus, claims 2-18 now all depend either directly or indirectly from claim 17. In view of these amendments, the rejection of cancelled claim 1 is now moot and reconsideration and withdrawal of the rejections of claims 2-18, and allowance of claims 2-19 is respectfully requested for at least the reasons to be discussed below.

Oshino ‘484 deals solely with the mounting of an **individual** optical element in a compliant frame to hold that individual optical element with reduced stress to avoid distortion of that individual optical element when the optical element is in an optical column for use or is out of the column for undergoing a procedure such as machining, polishing or coating. (See for example the title, paragraphs 0001, 0025, 0026, 0030, and Figs. 2(a), 2(b), 3, 4, 5 and 6 of Oshino ‘484). The term “optical element” as used in

Oshino '484 refers to an individual optical element, such as a mirror, as distinguished from an assembly of individual optical elements disposed within a common housing. For example, Fig. 1 and paragraph 0040 of Oshino '484 refer to a "projection optical system" 11 comprised of six individual mirrors which are "mounted and supported relative to one another inside a mirror 'column.' The mirror column is typically made of Invar or analogous material so as to be highly resistant to thermal expansion." In paragraph 0041 the '484 reference states:

"Each of the multi-layer coated mirrors in the projection-optical system 11 has an aspherical reflective surface formed by finely machining and polishing a respective mirror substrate...In this embodiment each multi-coated mirror is held in the mirror column by an optical element holding device as described later below."

The reference then goes on to describe various embodiments of a holding device (25) which includes a plurality of compliant "anchoring members" (22, 52, 32 or 42) which secure an individual optical element, such as a mirror, inside an optical column and also allows the optical element to be removed from the column for processing (e.g., coating or grinding) while the mirror remains in the same holding device.

Oshino '484 does not at all deal with mounting the optical column itself or any other assembly comprised of a plurality of individual optical elements, on a supporting structure that supports the assembly including not only the weight of the plurality of optical elements themselves, but also housing in which the plurality of individual optical elements are mounted. Quite to the contrary, Oshino '484 is explicitly content to rely solely on the conventional prior art solution of making a judicious choice of housing materials to mitigate stress on the housing. The last sentence of paragraph 0040 of

Oshino '484 states:

"The mirror column typically is made of Invar or analogous material so as to be highly resistant to thermal expansion" (emphasis added).

It is very clear from this statement that Oshino '484 does not recognize the limitations of this approach much less, expressly or impliedly disclose, or suggest, teach or otherwise motivate a person of ordinary skill in the art to provide a housing structure as presently claimed by Applicant to obtain significant improvement in mitigating the adverse consequences of not only thermally-induced stresses but also other external sources of stress.

Whereas Oshino '484 deals only the matter of mounting an individual optical element within an optical column, Applicant's invention as claimed in new claim 19 provides a structure for mounting upon a supporting structure a projection lens assembly, which has not only a housing but a plurality of optical elements within the housing arranged for imaging a mask onto a substrate. Claim 19 expressly recites that the supporting structure supports the projection lens assembly and bears the combined weight of at least the housing of the and the plurality of optical elements which are arranged within the housing for imaging a mask onto a semiconductor substrate.

The prior art of record is devoid of any teaching or suggestion or prompting to provide a structure wherein a projection lens assembly which has a plurality of optical elements mounted in a housing for imaging a semiconductor mask onto a substrate is mounted on a support structure by way of a plurality of supporting elements, each respective one of which forms part of a respective one of a plurality of connections

through which said housing is connected to said supporting structure and through which said weight of said projection lens is transferred to said supporting structure in such a way that supporting forces generated by said supporting structure as a result of said transfer of said weight of said projection lens assembly are taken up by a pressure force and a shear force which act on at least one said supporting elements.

Neither Oshino '484 alone or in any combination with any of the other art of record anticipates or renders the structure of claim 19 obvious because, as noted above, it relates only to the mounting of individual optical elements within a housing structure (e.g., optical column) but contributes nothing about how to provide a mounting structure which more effectively isolates the assembly, including its housing and the plurality of optical elements mounted inside the housing, from external stress influences in the manner recited in claim 19.

Claims 2-18 all depend either directly or indirectly from claim 19 and are therefore patentable over the art of record for at least the reasons noted concerning claim 19.

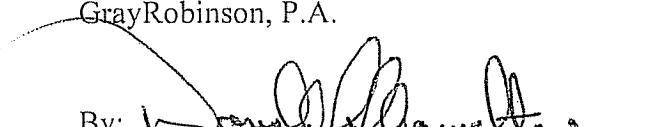
At least claims 2 and 17 are also submitted to be patentable over the prior art of record on independent and distinct grounds. Both of those claims recite an adhesive layer as part of the connections between the supporting structure of the housing and supporting structure. Since paragraph 0017, Oshino '484 expressly teaches against using adhesives, it is respectfully submitted that Oshino '484 cannot be properly construed as rendering claims 2 and 17 unpatentable.

Conclusion

In view of the foregoing it is believed that all the objections and rejections of record have been overcome and that claims 2-19 are patentable over the prior art of record and are in condition for allowance in their present form.

Respectfully submitted,

GrayRobinson, P.A.

By: 

Donald S. Showalter, Reg. No. 33,033

CUSTOMER No. 60474

P.O. Box 2328
Suite 1850
Fort Lauderdale, FL 33303-9998
(954) 761-7473